RESEARCH NOTES
SOUTHEASTERN FOREST EXPERIMENT STATION
Asheville, North Carolina

Number 81 April 1955

IPS BEETLES ARE KILLING PINES: WHAT SHALL WE DO ABOUT IT?

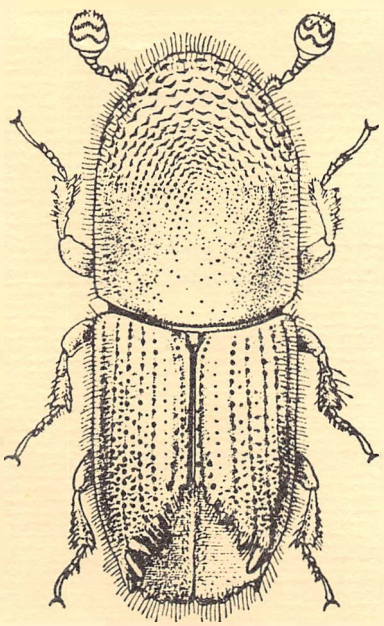
During the very dry years of 1954 and 1955, Ips engraver beetles have stepped up their numbers and made heavy attacks on pine in the Southeastern States. The flare-up is truly epidemic in some places. Central North Carolina, South Carolina and southern Georgia have severe outbreaks.

An aerial survey in January of southern Georgia, one of the hardest hit areas, showed 48,000,000 board feet or 65,000 cords of standing timber killed by insects. This figure does not include the large volume of timber killed and salvaged since June 1954, when the killing was first noticed. Much of the 1954 kill remained unsalvaged and was a complete loss to the lumber, paper, and naval stores industries.

HOW AND WHY DO THEY KILL TREES?

The Ips beetles are tiny, blackish, hard-shelled insects about 1/8 to 1/4 inch long. They are usually very active in the summer and fall, and during warm spells in the winter. They fly to and attack a tree--sometimes in the crown, sometimes in the trunk, sometimes from bottom to top--and bore through the bark. Hundreds of beetles attack at the same time. Wherever they bore, pitch runs out the hole and hardens, forming a "pitch tube." When the beetle reaches the wood, it bores a tunnel between the bark and the wood, up and down the tree. As it bores, it lays eggs spaced about 1/16 inch apart along each side of the tunnel. These eggs hatch into cream-colored worms which bore their own tunnels out from the beetle's tunnel. After a few weeks, these larvae stop feeding, rest, turn into beetles and leave the tree to look for other trees to start the cycle again. A cycle takes only about 6 weeks and there may be 4 to 6 of them during the year. If things are right for the beetle, every tree attacked and killed breeds up enough beetles to attack at least five more trees.

What makes conditions right for the beetle? Temperature, moisture, and many other factors. But mainly it is weakness or an unhealthy state in trees. It is the weak tree that becomes a target for insects. The more bugs, the more food they need; healthier trees are then attacked, until after awhile even the strongest trees are hit. Normally, when the weather is good, beetles will attack only weak limbs, a fire damaged tree, a lightning-struck tree, or one whose roots or trunk have been badly damaged in some mechanical way. They will attack tops during a cutting operation, and as long as there are plenty of tops for them to breed in they are quite happy. By the end of the season, the beetles in such a location are getting numerous. Then winter comes along bringing insect and disease enemies that cut the Ips population way down. But, during the last few years everything has been right for Ips, and dry weather has been especially good for it. Trees have generally become weakened by drought. Now, anything that comes along to weaken trees invites beetle attack--fire, windstorms, logging operations. Then too, a lot of forestry is going on "as usual." There's a lot of cutting which provides tops for beetles to get started in; there's naval stores which hurts the tree just enough to make it susceptible to attack. Let's remember this -- during normal weather most of these things don't favor the beetle, but during dry weather they do. Therefore, as long as dry weather lasts we've got to carry on woods operations a little differently in order to hold down the number of beetles and keep trees as healthy as possible. That means a little more work than usual, and a little more expense.



HOW DO WE FIGHT THIS BEETLE?

The most important thing to remember in dealing with Ips is that you must get rid of the timber in which the beetle is breeding or may breed. Here is a list of things to do and not to do if you want to reduce tree killing in your woods. 1/

1. Cut down immediately the trees that have beetles in them. Usually this means trees with fading crowns and trunks with fresh pitch tubes; a few "shot holes" in the bark. Get this wood to a mill or peel or burn it; destroy the tops too. If you can't do these things, you may have to spray with chemicals (we'll talk about this later).
2. Remove trees containing the bugs first; old bug trees may be salvaged later.
3. In a cutting operation, treat the tops to keep the bugs out by:
   a. Burning them, or
   b. Spraying them with chemicals, or
   c. Pulling them into the open and lopping them into small pieces so they will dry out.
4. Lightning-struck trees, or trees badly damaged by heavy equipment should be handled like bug trees.
5. Fire damaged trees should be examined carefully; check the inner bark. If it has browned, salvage the trees immediately to keep the bugs out.
6. Reduce naval stores in an area "hot" with bugs.
7. Don't store large quantities of pulpwood in the woods very long. If it must be stored, spray with chemical.
8. Spraying with the chemical BHC (benzene hexachloride) in a light petroleum oil is a very effective way of killing beetles when the jobs suggested above can't be done. You will want to know this about spraying:
   a. BHC kills the bugs under the bark.
   b. When sprayed on felled green trees, logs, tops, and pulpwood, it kills the beetles which try to bore in. It will keep them out for about 3 months. It will slow down degrade of the timber.
   c. It can be applied with a simple 2- or 3-gallon garden pressure sprayer.
   d. Apply it as a medium fine spray until the bark begins to drip. A mist spray is not desirable. Do not spray after rain when bark is still wet.
   e. BHC is easy to mix. Ask the manufacturer for a BHC concentrate containing one pound of gamma per gallon of solution. Tell him what you want to do with it. When you get the chemical, add 1 gallon to 55 gallons of light fuel oil, stir well and the solution is ready to use. Follow the manufacturer's directions carefully.
   f. The BHC spray, ready to use, costs less than 20 cents a gallon. A gallon will spray a 16-foot log 24 inches in diameter; 5 gallons will spray a cord of pulpwood.
   g. Here is a list of suppliers of BHC:

Ashcraft-Wilkinson Company, Atlanta 3, Georgia
FASCO, P. O. Box 658, Jacksonville 1, Florida
Southern Agricultural Insecticides, Inc., Hendersonville, N. C.
Taylor Chemical Co., Aberdeen, N. C.
Triangle Chemical Company, Macon, Georgia
Chapman Chemical Company, Memphis 3, Tennessee

This list is not complete; no discrimination is intended or implied against concerns not listed.

WHAT ELSE?

You can't do this bug job alone. If your neighbors have bug infested woods, you must all work together to clean up the woods. The beetles can fly and they don't stop at property lines.

How long will this serious bug activity keep going? We don't know. As long as dry weather continues, all woodland owners must pitch in to do everything they can to keep down the beetle and reduce timber losses.

1/ Control measures for black turpentine and southern pine beetles are somewhat different. Details are given in other publications.

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